

**APPARATUS AND METHOD FOR ON-CHIP CONCENTRATION USING A  
MICROFLUIDIC DEVICE WITH AN INTEGRATED ULTRAFILTRATION  
MEMBRANE STRUCTURE**

**ABSTRACT**

5           The present invention provides a microfluidic device capable of reacting an enzyme or  
other agent with a substantially purified polypeptide. In one embodiment of the present  
invention, the microfluidic device comprises a plurality of reaction channels wherein the  
substantially purified polypeptide is delivered to a reaction channel. Once confined within the  
reaction channel, the substantially purified polypeptide engages the enzyme or agent and  
10       produces a reaction product. In a preferred embodiment of the present invention, the reaction  
product is concentrated at a charged membrane prior to being removed from the microfluidic  
device. Additionally, the present invention provides a method of concentrating a positive analyte  
at a positively charged membrane and a negative analyte at a negatively charged membrane.  
Once concentrated, the analytes may be removed from the microfluidic device.

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